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ABSTRACT

A study was conducted to determine how to reach out in an effective manner via televised public service announcements (PSAs) to particular at-risk audiences to motivate participation in drug abuse prevention programs. The subjects (207 young adults in Fayette County, Kentucky) responded to the M. Zuckerman sensation-seeking questionnaire. They also viewed a video of several televised messages and filled out a questionnaire packet consisting of 37-item mood scale, followed by administration of the behavioral intention, attitude, and drug use scales. Analysis of variance showed no significant main effects of sensation seeking, message sensation value, or drug use on the index of behavioral intention. A strong main effect emerged for motivational introduction. The results indicated that careful attention should be paid to the verbal audio characteristics of the introductory portion of televised anti-drug PSAs. The behavioral intention of low sensation seekers was more affected by the low sensation message than by the high sensation PSA. It was also found that high sensation seeking users of illicit drugs displayed by far the strongest behavioral intention to call the hotline advocated in the PSA compared to the appropriate control group. Results provided convincing evidence that two related factors, sensation seeking and message sensation value, can be employed in concert to target televised anti-drug PSAs at young adults who are users of illicit drugs or who are at risk of becoming users. (Four tables and four figures of data are included. Fifty-two references are attached.) (MG)

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SENSATION SEEKING AND TARGETING OF TELEVISED ANTI-DRUG PSAs

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This paper addresses a limited but vitally important objective--how to reach out in an effective manner via televised public service announcements (PSAs) to particular "at risk" audiences to motivate participation in other phases of drug abuse prevention programs. Anti-drug PSAs have become an increasingly popular tool in prevention campaigns, but media-only campaigns have been largely unsuccessful in bringing about changes in behavior (Atkins, 1974; Flay, 1981, 1983). Media have been more successful in the context of comprehensive public health campaigns involving both media and non-media efforts to reach target populations, as in the Stanford Three-Community Study (Flay & Sobel, 1983). There is a need, however, to strengthen the mass media component of campaigns against drug abuse. Studies of the use of the mass media for drug abuse prevention which included anti-drug or alcohol PSAs show that many PSA campaigns failed to bring about meaningful change because they failed to reach their target audience (Capalaces & Starr, 1973; Delaney, 1978, 1981; Field et al., 1983; Hanneman, 1973; Hanneman & McEwen, 1973; Harris & Associates, 1974; Hu & Mitchell, 1978; Morrison et al., 1974; Plant et al., 1979; Rappaport et al., 1975).

There are several reasons for this, according to Flay and Sobel (1983): 1) lack of dissemination--in several campaigns studied the PSAs were aired outside of prime time and/or on non-commercial stations, and then only infrequently, thus greatly reducing reach and frequency of exposure; 2) lack of targeting--many anti-drug PSAs have been directed at unidentifiable audience segments; 3) selectivity--individual attitudes, values, and norms affect exposure to drug-related messages--drug users and those at high risk for becoming users are likely to avoid anti-drug PSAs.

The lack of dissemination problem, though difficult, can be addressed

by well-planned and carefully executed approaches to convincing media gatekeepers of the need to air more PSAs more frequently in prime time (Flay & Sobel, 1983). A recent example of a successful collaboration between message designers and the media was the "Partnership for a Drug-Free America" campaign (Black, 1988). Solving the targeting and selectivity problems, however, will require much additional research. According to Flay and Sobel (1983), much more emphasis should be placed on formative message research in the laboratory before proceeding to more expensive field evaluations, and certainly prior to program dissemination: "Only after it has been established than an efficacious communication product has been developed, is it worth disseminating it" (Flay & Sobel, 1983, p. 26).

A series of studies funded by the National Institute on Drug Abuse, one of which is reported on here, is focused directly on the problem of developing and testing methods of enhancing the effectiveness of televised anti-drug PSAs. These PSAs often are submerged in an overwhelming clutter of programming and product advertisements and must be capable of: 1) immediately attracting the attention of target audience members; and 2) motivating these viewers to attend to the remainder of the message. In addition, such messages require relatively high levels of information processing intensity and/or involvement to achieve informational and persuasive goals. Further, motives for watching television ordinarily do not include exposure to advertising and PSAs.

Designing effective televised anti-drug PSAs for use in comprehensive prevention campaigns is thus a difficult task. Ways must be found to motivate both attention to the entire message and high-level processing of its content. In this study, principles for more effective design of PSAs were drawn from several theoretical and research areas, including need for

activation theory, sensation seeking, media uses and gratifications, information processing research in advertising, and research on attention to television.

In addition, the targeting problem was addressed by designing the PSAs to be attractive to a specific age cohort, young adults aged 18-21, rather than to unidentifiable audience segments. The 18-21 age group displays the highest, or nearly the highest, usage levels for a number of different drugs, according to the 1985 National Household Survey on Drug Abuse. For example, 39.1% of this group had used marijuana in the past 12 months, and 23.5% in the past 30 days (highest among the age groups). The group also ranks first in cocaine use, with 17.5% using cocaine in the past 12 months and 8.7% in the past 30 days, compared to figures of 8.2% and 3.9% respectively for the 16-17 age group.

Finally, the selectivity problem was addressed by designing messages to appeal to target audiences according to their sensation-seeking levels, an individual difference variable found to be highly correlated with drug use.

THEORETICAL BACKGROUND AND PRELIMINARY STUDIES

Sensation Seeking

Need for sensation--which has been found to be associated with preferences for novel, complex, and ambiguous stimuli (e.g., Zuckerman, 1987)--has been measured both as a personality trait (Pearson, 1970, 1971; Zuckerman, 1978, 1983, 1987; Zuckerman, Kolin, Price, & Zoob, 1964) and as part of a more general activation theory of information exposure (Donohew, Finn, & Christ, 1988; Donohew, Palmgreen, & Duncan, 1980).

Zuckerman incorporated Berlyne's arousal potential qualities of

stimulation and factors which reduce arousal potential, including repetition, constancy, and over familiarity as ends of a sensation-seeking continuum united in an optimal level of arousal theory of the sensation-seeking motive. A Sensation Seeking Scale (SSS) was constructed to measure the characteristic (Zuckerman, Eysenck, & Eysenck, 1978). As described by Zuckerman (1978, 1987) the four subscales of the SSS are:

(1) Thrill and Adventure Seeking: A desire to seek sensation through physically risky activities which provide unusual situations and novel experiences, e.g., parachuting and scuba diving.

(2) Experience Seeking: A desire to seek sensation through a non-conforming life-style, travel, music, art, drugs, and unconventional friends.

(3) Disinhibition: A desire to seek sensation through social stimulation, parties, social drinking, and a variety of sex partners.

(4) Boredom Susceptibility: An aversion to boredom produced by unchanging conditions or persons and a great restlessness when things are the same for any period of time.

Describing differences between high and low sensation seekers, Zuckerman (1987) has observed that:

> The high sensation seeker is receptive to novel stimuli; the low tends to reject them, preferring the more familiar and less complex. The high sensation seeker's optimal level of stimulation may depend on the levels set by the characteristic level of arousal produced by novel stimuli. Anything producing lower arousal levels may be considered "boring."...Apart from the voluntary avoidance of high intensities of stimulation, the low sensation seeker may have a type of nervous system that rejects such stimulation or inhibits cortical reactivity to high intensity stimuli.

Findings from both current and previous research by the first author strongly indicate that sensation seeking offers an avenue for targeting

prime at-risk groups and designing messages and programs to reach them. The studies consistently indicate highly significant differences in marijuana use between high and low sensation seekers at both the junior and senior high school age levels. Among junior high school students, high sensation seekers (HSS) were clearly the first to use marijuana. The disparity between high and low sensation seekers (LSS) in drug use among members of this age group was so great that it was difficult to find enough subjects for the experimental condition calling for low sensation seeking users. Results are essentially the same when the measure of drug use is marijuana, alcohol, tobacco, cocaine, and other substances (See Table 1).

TABLE 1 ABOUT HERE

Zuckerman and associates (1978) found that 74% of college undergraduate scoring high on his sensation seeking scale had used one or more drugs, as opposed to 23% of those scoring low on the scale. Association of sensation seeking with drug use has been supported in a number of other studies. Using a variety of personality measure, Segal and Singer (1976) found that the SSS provided the most discrimination between nonusers and various user groups. Use of specific drugs, such as amphetamines, marijuana, hashish, and LSD correlates strongly with sensation seeking. Studies of sensation seeking and alcohol use have tended to employ the disinhibition subscale of the SSS. Positive relationships were found between alcohol use and the disinhibition subscale in adolescents (Bates, Labouvier, & White, undated) and college student populations (Schwarz, Burkhart, & Green, 1978) but not among alcoholic populations (Kish & Leahy, 1970; Pare, 1973). Studies conducted with drug

abusers found that medium and high sensation seekers had experimented with drugs at an earlier age than low sensation seeking abusers, and had more varied drug experience (Zuckerman, 1978).

In the area of communication, persons with high need for sensation also tend to tolerate or even require stronger messages for attracting and holding their attention (Donohew, Finn, & Christ, 1988; Donohew et al., 1980). Findings from communication studies thus far indicate that individual differences in need for sensation and, to a lesser extent, in prior drug use play a major role in exposure to and comprehension of drug abuse prevention messages, and in arousal (skin conductance), attitudinal, and behavioral intention responses to the messages,

The messages used in the experimental studies by Donohew and associates were most effective with two prime target groups:

(1) those likely to be at greater risk of becoming drug users--high sensation seekers (HSS) who had not used marijuana but were ambivalent in their attitudes toward its use, making them likely to be at greater risk for becoming users, and

(2) low sensation seeking (LSS) moderate users of marijuana, whose drug use behaviors were somewhat beyond the risk-taking norm for their personality type and who were found to have mixed attitudes toward marijuana use.

These two groups indicated the most interest in further exposure to prevention messages. Two other groups in the study showed less interest in the message:

(1) high sensation seeking drug users, who indicated favorable attitudes toward marijuana use, and

(2) low sensation seeking non-users who were highly unfavorable to marijuana use.

These results take on more meaning when considered in the context of a drug abuse prevention campaign employing the mass media. They are particularly pertinent when the objective of the mass media portion of the campaign is to generate awareness and attitude change and to stimulate responses that bring audiences into situations where interpersonal contact can be initiated.

Optimal Levels of Arousal

Human beings are continuously involved in a search for stimulation, driven by pleasure centers of the midbrain (Olds & Fobes, 1981). It has been known for nearly a century that individuals find arousal in moderate amounts to be pleasurable (Wundt, 1874). This response to moderate arousal soon became connected with optimal behavior in an inverted U-curve (Yerkes & Dodson, 1908). At the lower end of this curve, arousal is too low to motivate performance. Beyond this and up to an optimal point, arousal has positive motivating values. After that point is passed, its value tends to be negative and inversely related to performance (Hebb, 1955). Berlyne (1971) hypothesized that the Wundt curve arises from the action of both a pleasure system and an aversive system, with the pleasure system having a lower threshold of activation.

Arousal theories thus hold that behavioral efficiency increases as arousal increases to some optimal level, then falls off as arousal level continues to increase (Cacioppo & Petty, 1983; Cacioppo, Petty, & Tassinary, 1987). These theories also have implications for exposure to particular stimuli. As noted by Martindale (1981):

> ...the more arousal potential a stimulus has, the more attention an organism will devote to it. Up to a certain point, this increasing attention will be accompanied by increasing pleasure. Presumably, this will lead the organism to approach the stimulus in question. Beyond this point, the increasing attention will be accompanied by increasing displeasure (p. 257).

Information exposure. As described above, need for arousal is fundamental to human behavior and serves an important function in the mechanisms guiding exposure to the mass media. The activation theory of information exposure referred to earlier (Donohew, Palmgreen, & Duncan, 1980) is grounded in assumptions that individuals operate most effectively at an optimal level of arousal which varies across individuals (See Figure 1).

FIGURE 1 ABOUT HERE

The theory assumes that motivation for exposure to a message involves both cognitive need for information and physiological need for stimulation (Donohew, Finn, & Christ, 1988; Finn, 1983, 1984). It proposes that individuals enter information exposure situations with the expectation of achieving or maintaining this optimal state of activation. It should be noted, however, that the monitoring of this "expectation" may be carried out at a low level of awareness. If the level of activation falls below or exceeds the desired level, individuals will tend to turn away from the source of information and seek more or less exciting stimuli, as appropriate to their needs. If the activation level reaches or remains within some range perceived to be acceptable, individuals will continue to expose themselves to the information. Under conditions of very high arousal, even high sensation seekers would be likely to avoid a message.

One shortcoming of this theory, however, is that it is difficult to specify just what is high arousal because there does not yet exist a parsimonious procedure for establishing individual arousal baselines. It is assumed, however, that for HSS individuals the most likely state at any given point in time is stimulus hunger, and for LSS it is stimulus satiation. Thus, individuals with a high need for activation would most of the time be in an arousal-seeking mode and those with lower needs would be in an arousal-avoidance mode.

The optimal level of arousal theory does not imply, however, that individuals read, watch, or listen to only those items which maintain arousal levels within desired boundaries. As Donohew, Finn, and Christ (1988) note:

> Although arousal needs do appear to guide (people) in their selections, they may choose to override these affective tugs for any of a number of reasons, such as desire to learn more about a topic of importance to them in which they perceive themselves to be deficient. (p.195)

Attention to Televised Ads

Televised ads and PSAs usually are regarded by viewers as unwanted intrusions in the program viewing experience, except insofar as commercial breaks provide the opportunity to go to the bathroom, get a snack, etc. (Anderson, 1985; Lutz, 1985). As Anderson (1985, p. 195) has observed, "The television commercial is a brief segment of content inserted in the audio visual flow that is unrelated to the content surrounding it..With few exceptions, the audience has no prior interest in watching the commercial." Research by Krugman (1986) supports this view. Krugman found that recall of specific facts was low for many ads, but people could at least recognize that they had been exposed to some part of most ads in the study. That

exposure was often limited to the first few seconds of the ad, which Krugman hypothesizes is the amount of time it takes viewers to decide whether or not to continue watching the ad. According to Krugman:

> ...viewers take a little time to come to some sort of "decision" or make some form of mental commitment to view or not to view...Whatever the exact time it takes to do this, it seems to be a regular phenomenon of advertising exposure. It suggests again that we should not speak only of captive audiences "watching" TV advertising, but also of active audiences "monitoring" the advertising and distributing their attention selectively (1986, p. 81).

Motivational Introduction. It is crucial, therefore, that the initial few seconds of the ad or PSA possess the ability to motivate further processing. Burnkrant & Sawyer (1983) reviewed several studies which provide evidence of the ability of appropriate introductory titles, pictures, or paragraphs to stimulate greater effort in processing printed messages with consequent greater learning of message content. In addition to motivating continued exposure, such introductory material, if appropriately related to subsequent message content, apparently provides a schema for more efficient and intensive processing. Appropriate audio or visual content inserted at the beginning of a televised anti-drug message might be expected to produce similar effects on involvement, information processing intensity, and learning. As Burnkrant and Sawyer (1983, p. 60) observe:

> Anything advertisers can do at the beginning of the advertisement to provide information about the focus of the communication should have a facilitating effect on the processing of that advertisement. The presence of an explanatory title, rhetorical question, or picture at the outset of the advertisement tying the communication to the information to be conveyed in the message would be likely to have a facilitating effect on learning...A creative message introduction may stir the consumer out of his perceived optimal information state and induce further processing.

Involvement, Information Processing Intensity, and Learning

Though attention is certainly a prerequisite for message effects, involvement also is important. While there are several theoretical and operational approaches to involvement in the advertising literature, there is consensus that high involvement means personal salience or importance (Greenwald & Leavitt, 1985, p. 235). In addition, at least intermediate levels of involvement are required for messages whose primary goal is to provide information, another goal of many anti-drug PSAs. Burnkrant and Sawyer (1983) have reviewed a number of studies which show that involvement is a major predictor of the level of information-processing intensity (or cognitive effort), and that higher intensity levels lead to greater learning. A motivational introduction to an ad/PSA that can stimulate greater involvement, therefore, can lead to greater message effectiveness.

NEED FOR FORMATIVE RESEARCH

The foregoing discussion strongly implies that messages designed to appeal to the needs of high sensation seekers will be more effective in reaching and influencing this high-risk group.

We are testing this proposition in a series of laboratory experiments in which both HSS and LSS are exposed to anti-drug PSAs either high in sensation value or low in sensation value. We define sensation value as the ability of formal and content audio-visual features of a televised message to elicit strong or weak sensory, affective, and arousal responses.

Thus, a major goal preparatory to conducting these studies was to develop two PSAs for a target audience of 18-22 year olds, one aimed at HSS and the other at LSS individuals.

Message Design and Pretesting

The process of attaining this goal included several steps. First, characteristics of televised messages that have differential appeal for HSS and LSS individuals were determined. Second, this information was used to develop several concepts for PSAs, three of which were developed into high sensation value (HSV) and low sensation value (LSV) storyboards and pretested with 18-22 year olds. Third, based on pretest responses and production considerations, one concept was chosen and its storyboards modified for final production. The PSAs were produced by Michael Kilbourne, an award-winning producer who participated in all aspects of their development.

The strategy for accomplishing the first step was based on the notion that HSS individuals seek stimuli producing higher levels of arousal than LSS individuals (Zuckerman, 1987). Therefore, it was thought that various production characteristics or "formal features" of televised messages might produce different responses in the two groups of people. For example, a more unusual format, a greater frequency of editing techniques, faster and more frequent movement, and more intense music might be characteristics that would increase the "sensation value" of a televised message, thus increasing its appeal to HSS viewers. With this in mind, a large number of commercials and PSAs were reviewed, from which nine commercials and three PSAs were selected for testing. This material included a variety of content and production techniques and was thought to represent wide variations in sensation value: from a peaceful, slow-paced ad for Classico spaghetti sauce to an intense, music video format Pontiac ad.

Focus group interviews were conducted and quantitative data were collected in order to determine responses to each of the spots.

Participants were drawn from a randomly generated list of 500 18-22 year old registered voters in Fayette County, Kentucky, and from University of Kentucky communication classes. Those who agreed to participate were asked to complete the Zuckerman Sensation Seeking Scale and to return it by mail. The median for the sample was 20. Those with scores between 19 and 21 were excluded. Those scoring 18 or below were classified as low sensation seekers and those scoring 22 or above as high sensation seekers. From these pools, four 6-person focus groups of HSS subjects and four 6-person focus groups of LSS subjects were created.

The members of each group participated in a session of approximately two hours. The first part of the session was a general discussion about advertising, during which subjects were asked about various techniques used in commercials and to pick their most and least favorite commercials. After the general discussion, the group was shown six of the 12 selected commercials. Two different orders of presentation were employed. After viewing each spot, the group members gave their opinions and discussed what they particularly liked or disliked about it. After all six spots had been shown, subjects were asked to choose the spots they like most, and those they liked least. Focus group discussions were audio-taped and transcribed. Transcripts were coded for mention of positive and negative ad/PSA attributes. Each member of the project team also read all transcripts as part of a more qualitative assessment of the preferences of HSS and LSS respondents.

The remainder of each session consisted of the collection of quantitative measures from individual members of each group. Five of the focus group participants were brought into a communications laboratory to view the remaining six spots they had not discussed. (Because of the

capacity of the laboratory, the participant with the sensation seeking score closest to the median was excused). Physiological arousal was measured while the subjects viewed the spots, and ratings of how much they liked the spots and measures of recall of the spots were obtained after viewing.

Overall, consistent conclusions emerged from the focus group data and the quantitative measures. In general, characteristics producing differential appeal were not so straightforward as a consideration of formal features and their relation to sensation value might have implied. First, HSS and LSS viewers responded similarly to a number of characteristics. For example, rock music and the fast-paced music video format, humor, and a good story line with believable characters that the audience could relate to were like by both groups, and neither HSS nor LSS viewers wanted to be "preached to" in a PSA. Second, differences between the two groups were more subtle than expected. While rock music was favored in general, HSS subjects preferred more intense, hard-edged music than LSS subjects. HSS subjects also reacted more positively to novel formats and unusual uses of formal features (e.g., extreme close-ups and heavy use of sound effects in the absence of music). Higher levels of suspense, tension, drama, and emotional impact also were more strongly favored by HSS viewers. LSS participants preferred more closure at the end of a story (e.g, they responded positively to a tag line summing up the message of one PSA), while HSS subjects expressed a preference for drawing their own conclusions (e.g., they were more likely to see the same tag line as an example of "preaching" and as insulting to their intelligence).

Based on the data from the focus groups, a number of possible message concepts were developed for high sensation value (HSV) and low sensation

value (LSV) versions of an anti-drug PSA. The goal was to target the versions specifically at HSS or LSS viewers, respectively, while controlling as many message variables (e.g., general format and theme, actors, length, narrator) as possible across the HSV and LSV versions. Nevertheless, one content difference was intentionally introduced. Past research (Donohew, 1988) suggests that LSS individuals are relatively unlikely to become users unless society, probably as represented by peers, intervenes. Thus, it was decided that the LSV message should aim at the development of peer resistance skills. In contrast, research findings (Donohew, 1988) suggest that HSS individuals are at greater risk to become drug users, and may be influenced best by encouraging the substitution of alternative exciting but prosocial activities. Three message concepts were eventually selected and developed into HSV and LSV storyboards.

To assess the effectiveness of the concepts and the differentiation of the HSV and LSV versions, two focus groups and two individual reaction groups were conducted. These groups were drawn from 18-22 year olds in University of Kentucky classes. Sensation seeking scores were obtained for all participants; cutpoints of 18 and 22 were used to define LSS and HSS subjects. The three sets of storyboards were presented as color slides with accompanying audio and visual instructions read by the moderator. Participants saw all six storyboards, with presentation order of the three main concepts and the two versions of each varying across groups. In the two focus groups (containing approximately 10 participants each), an open-ended discussion was held after the viewing of each storyboard. In the two reaction groups, participants completed individual questionnaires after each storyboard. Subjects were asked about the message's ability to gain attention and to provoke thinking about drug abuse, and about their likes

and dislikes for the message. They also were asked to choose between the two versions of each message and to provide reasons for the choice.

The concept chosen for production represented a pinball game. A hand was shown pulling back the plunger to start the ball through the machine. As the ball bounced off bumpers, scenes of social activities (LSV) or exciting alternatives to drug use (HSV) were shown. When the possibility of drug use was introduced, the game "tilted" and the ball entered the game's "Dead End Alley" depicting drug abuse and negative consequences of using drugs. The PSAs ended by presenting 1-800-hotline numbers to call for information about peer resistance skills (LSV) or alternatives to drug use (HSV). In the motivational introduction version of each PSA, the hand pulling back the plunger in the initial scene was accompanied by a dramatic voiceover saying, "The game is life."

The pinball concept was selected for a number of reasons. Subjects in the focus and reaction groups generally perceived it as novel, creative, and attention-getting, and many of its specific features drew positive comments. It also had production advantages. The concept called for a combination of animation and live action. This combination permitted costs to be kept reasonable, and also allowed a greater degree of manipulation of specific features to distinguish the HSV and LSV versions.

The pretesting revealed that a number of modifications were necessary before final production. The alternatives to drug use and social situations presented were perceived as insufficiently realistic, and so were modified in accord with participant's responses. The data also revealed that the LSV version needed to be made more appealing to LSS viewers. Several changes were made to accomplish this, including the attenuation of the emotional impact and the strengthening of tag lines at the end of the spot.

HYPOTHESES

It was expected that the high sensation-value anti-drug PSAs would be more effective with high sensation seekers (in inducing a stronger behavioral intention to call a drug hotline as advocated in the PSA, and a more negative attitude toward drugs), while the low sensation-value PSAs should be more effective with low sensation seekers.

In addition, it was expected that a PSA which included a verbal audio motivational introduction would be more effective than an otherwise identical PSA without such an introduction.

The following research question also was investigated: does level of drug use mediate the effects of the above message variables?

METHODS

Independent Variables

Independent variables were: 1) sensation seeking--a personality measure which predicts both drug use and attention to arousal-producing messages; 2) message sensation-value--the ability of formal and content audio-visual features of televised anti-drug PSAs to elicit strong or weak sensory, affective, and arousal responses; 3) motivational introduction to the PSA--presence or absence of a brief introductory verbal audio message to attract and motivate continued attention; 4) drug-use--a quantitative measure of use of various drugs. These variables were treated as factors in a 2X2X2X2 randomized groups posttest-only design.

Sensation seeking. This variable was measured using Zuckerman's (1978) Sensation Seeking Scale, Form V. The 40-item scale measures four factor analytically derived dimensions: (1) thrill and adventure seeking, (2) experience seeking, (3) disinhibition, and (4) boredom susceptibility. In

previous administrations, it has demonstrated the capability of discriminating among the treatment groups. For this study, three items dealing with drug use were omitted to eliminate any part-whole correlation between sensation seeking and drug use. The reliability of the 37-item scale was .81 (coefficient alpha).

Message sensation-value. The HSV and LSV PSAs described earlier constituted the manipulation of message sensation-value.

Motivational introduction. As described earlier, the motivational introduction consisted of the voiceover, "The game is life," during the initial scene of the PSA. Versions of the PSAs without the motivational introduction were identical except for this voiceover.

Drug use. Questions about levels of use of illicit drugs were adapted from instruments used in a continuing survey of young people by the Institute for Social Research at the University of Michigan (Johnston, Bachman, & O'Malley, 1982). Active drug users were defined as those who had indicated use of at least one of seven illicit drugs in the 30 days prior to the experiment (marijuana, LSD, uppers, downers, tranquilizers, cocaine or crack, opiates). Non-users, for the purpose of this study, were those with no indicated illicit drug use in the month's time.

Dependent Variables

Behavioral Intention Index. Immediately after viewing the experimental PSA for a second time(See "Laboratory Procedure"), those subjects exposed to the high sensation value (HSV) message were asked, "If you wanted information about exciting alternatives to drug use, how likely is it, on a scale of 1 to 5, that you would call an 800 hotline?" Those exposed to the low sensation value (LSV) message were asked, "If you wanted information

about resisting peer pressure to use drugs, how likely is it, on a scale of 1 to 5, that you would call an 800 hotline?" At a later point in the questionnaire, subjects were asked their likelihood of calling an 800 hotline for information pertaining to the topic of the message they had not seen (i.e., peer pressure for those exposed to the HSV PSA, alternatives for those who watched the LSV PSA). A ratio was then developed, as expressed in the following equation:

$$\text{BI Index} = \left[\frac{\text{BI: Seen(Experimental Mean)}}{\text{BI: Not Seen(Experimental Mean}}\right] \div \left[\frac{\text{BI: Seen(Control Mean)}}{\text{BI: Not Seen(Control Mean)}}\right]$$

The above mean ratio contains both within-subject and between-subject controls. The BI:Seen vs. BI:Not Seen comparison controls for a subject's willingness to call any hotline regardless of whether or not the subject was exposed to information relevant to that hotline. Dividing by the appropriate control group's responses provides the classic comparison of those exposed to versus those not exposed to the message. Index values greater than 1.00 indicate that behavioral intention to call the appropriate hotline was influenced positively by the message.

Attitude Toward Drug Use. Experiment participants were next asked to indicate on a scale of 1 to 5 how they felt about their personal use of drugs in relation to each of six adjective word pairs (good/bad, pleasant/ unpleasant, valuable/ worthless, nice/awful, favorable/unfavorable, acceptable/unacceptable). This scale has been employed in previous drug abuse prevention research (Fisher & Botto, undated). Again, a ratio was created with the averaged response of each subject serving as the numerator and the appropriate control group's averaged response as the denominator:

$$\text{Attitude Index} = \frac{\text{Mean Attitude (Experimental Group)}}{\text{Mean Attitude (Control Group)}}$$

Index values less than 1.00 indicate more negative attitudes toward drugs than those displayed by the appropriate control group.

Sampling Procedure. During the summer of 1988, 2,200 names and addresses of 18- to 22-year-olds were selected at random from drivers license listings for Fayette County, Kentucky, by the State Division of Drivers Licensing. The University of Kentucky's Survey Research Center then garnered home phone numbers on as many of these people as they could locate (approximately two-thirds of the sample). A phone-calling team then attempted to contact these young adults in a search of volunteers for the experiment. Some of those reached by phone were rejected because they could not meet one or more criteria, including: (1) non-involvement in earlier campus drug studies; (2) regular television viewership. When it became apparent we would not be able to obtain enough subjects from this list, recruitment ads were placed in the local newspaper and an area shopper's weekly. Recruitment booths were temporarily established at a shopping mall and at two local schools of higher education. Furthermore, a request for volunteers was made in one of the undergraduate communication classes at the University of Kentucky. All these applicants were screened to guarantee they met all necessary criteria. Throughout the sampling period, an attempt was made to include an approximately equal number of males and females.

A total of 207 subjects were included in the final analyses of the experiment. Of this number, 46.4% were male, 92.3% were caucasian, 6.8% were black, 77.8% were in college or had some college education, and 6.3% did not earn a high school diploma. These percentages suggest an under-

representation of non-caucasians and those who had never gone on to college. There was a fairly even distribution by age with a median of 20.

Administration of Sensation Seeking Questionnaire. Those people contacted by phone who expressed an interest in participating were mailed the Zuckerman sensation-seeking questionnaire. Others who volunteered in person were immediately asked to respond to the scaled items. From the total number of people between the ages of 18 and 22 who had filled out the sensation-seeking questionnaire (n=296), some not participating in the final experiment, a median split was obtained on the sum of 37 non drug-related items in the scale. Low sensation-seekers were consequently defined as those people who scored 18 or less, and high sensation seekers as those who scored 19 or greater. The two groups were then randomly assigned to one of the experimental conditions (n=165) or the the control group (n=42).[2]

Laboratory Procedure

Upon arrival at the laboratory, subjects were briefed on the nature of the study and procedures for protecting confidentiality, after which they signed a consent form. They then were seated in classroom desks (two to five subjects per session), facing a 26" color television monitor, and told that they soon would be shown several televised ads/messages. They were asked to refrain from talking and unnecessary movement. The experimenter then left the room. Subjects began viewing the videotape, which began with four minutes of a slow-paced story from "CBS Sunday Morning." The videotape continued with two 30-second commercials (AT&T, Pontiac), one of the four 30-second PSAs, then three 30-second commercials (radio station, Pontiac, AT&T), and finally a repeat of the PSA.

Immediately after viewing the videotape, subjects filled out a

questionnaire packet consisting of a 20-item mood scale (not reported here), followed by administration of the behavioral intention, attitude, and drug use scales. Subjects also indicated their age, gender, and educational level on the questionnaire. Afterward they were permitted to leave. Subjects in the control group participated in all of these procedures except the anti-drug PSAs were not included in the video content.

No pretest was administered for any of the dependent variables because of the wish to avoid sensitizing Ss to the anti-drug PSA (Campbell & Stanley, 1963). The attempt to avoid subject awareness of the PSA focus also was the reason for embedding the PSA in programming and a series of product ads. A further problem with pretest-posttest designs is the methodological difficulties involved in analyzing change scores (Cohen and Cohen, 1983; Cronbach and Furby, 1970). We therefore opted for a posttest-only randomized-group design with control group.

RESULTS

Behavioral Intention

Analysis of variance showed no significant main effects of sensation seeking, message sensation value, or drug use on the index of behavioral intention. A strong main effect emerged, however, for motivational introduction ($p = .011$). The PSA versions with the motivational intro generally were more effective ($\bar{X} = 1.01$) in inducing subjects to call the appropriate hotline, relative to the appropriate control group. The results indicate that careful attention should be paid to the verbal audio characteristics of the introductory portion of televised anti-drug PSAs.

Much more important from a targeting perspective, however, is the

interaction between message sensation value and sensation seeking ($p = .059$). As hypothesized, the behavioral intention of low sensation seekers was more affected by the low sensation message (relative to the appropriate control group) than by the high sensation PSA (see Figure 2; $p = .056$ by one-tail test. Planned comparisons in this and other interactions discussed followed the Bonferroni procedure to control for family -- wise error rate). High sensation seekers, on the other hand, were somewhat more persuaded by the high sensation message, although the difference here was not statistically significant.

FIGURE 2 ABOUT HERE

The only other significant two-way interaction, between sensation seeking and drug use ($p = .023$), revealed a somewhat surprising pattern (see Figure 3). It was expected that high sensation seeking users of

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FIGURE 3 ABOUT HERE

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illicit drugs would, for both behavioral and biological reasons, be the most resistant to anti-drug messages. Instead, this group displayed by far the strongest behavioral intention to call the hotline advocated in the PSA relative to the appropriate control group ($\bar{X} = 1.40$). Low sensation seeking users of drugs, on the other hand, displayed negative effects on behavioral intention ($\bar{X} = .85$; difference between HSS users and LSS users significant at $p = .05$ by two-tail test). Low sensation seeking non-users of drugs showed some positive impact of the message ($\bar{X} = 1.18$). Finally, high sensation seeking non-users, a group particularly at risk to become drug

users, on the surface appeared to be unaffected by the appeal to call the hotline ($\bar{X}$ = 1.02). This finding, however, ignores the potential effects of message sensation value and motivational introduction. As we shall see, taking into account these important message factors suggests strategies for persuading this important group.

The important of message variables, in fact, is underscored in the significant interaction (p = .044) involving message sensation value, motivational introduction, and drug use (see Table 2). For non-users of

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TABLE 2 ABOUT HERE

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drugs in the last 30 days, the motivational intro versions of both the HSV and LSV messages were superior to the non-intro versions (Duncan's test was applied in Tables 2, 3, and 4 where appropriate). Since their BI index means are considerably greater than 1.00, it also is apparent that non-users in both the HSV and LSV intro conditions were more likely to call the appropriate hotline than their respective control groups. In other words, both appeals were affective. For drug users, the picture is less clear, since the four cell means did not differ significantly (F= 1.21, p = .32). However, the LSV intro version ($\bar{X}$ = 1.72), and both the non-intro ($\bar{X}$ = 1.32) and intro ($\bar{X}$ = 1.23) versions of the HSV message positively affected behavioral intention to call the hotline.

The above three-way interaction, while having implications for message targeting, does not consider the sensation seeking level of the subject. Although the four-way interaction involving all of the independent variables was not statistically significant, it is enlightening to examine the relative effects of the four different versions of the PSAs on the four

types of individuals which result from crossing sensation seeking level with drug use (i.e., high sensation seeking users, high sensation seeking non-users, low sensation seeking users, and low sensation seeking non-users). This examination must be very tentative, of course, because of small cell sizes in several cases, and should bear in mind that certain mean differences are not statistically significant by Duncan's test.

If we consider first the two non-user groups (see Table 3), the motivational intro version of the PSA was superior to the non-intro form in

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TABLE 3 ABOUT HERE

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all four comparisons. Moreover, and consistent with our expectations, the LSV intro message was the most effective of the four messages with LSS non-users ($\bar{X}$ = 1.48), while the HSV intro version was the most effective with HSS non-users ($\bar{X}$ = 1.58). As suggested earlier, the overall behavioral intention mean for HSS non-users ($\bar{X}$ = 1.02) indicating no message effect is very misleading. The more fine-grained analysis which takes into account message factors reveals that this important at-risk group was "reached" effectively with the message hypothesized to do so; i.e, a message high in sensation value which included a motivational introduction.

Unfortunately, the LSS user group is too small (n=11), particularly when it is subdivided by message condition, to yield valid inferences. The HSS user group, while large enough (n=36), yielded no significant differences among the four cell means. Still, the absolute values of the index means indicate that the intro ($\bar{X}$ = 1.43) and non-intro ($\bar{X}$ = 1.37) versions of the HSV message were effective in inducing HSS users to intend to call the correct hotline. Surprisingly, however, the subgroup of HSS

users with the highest behavioral intention mean was that exposed to the LSV message with motivational intro ($\bar{X}$ = 2.04). This subgroup is quite small (n=7), and any inferences based on it must be highly tentative, but it would appear that HSS users may be vulnerable to appeals based on exciting alternatives to drug use and to appeals which promise peer resistance skills.

Attitude Toward Drugs

Analysis of variance with the attitude toward drugs index as the dependent variable showed significant main effects of motivational introduction (p = .001) and message sensation value (p = .001). Inspection of the attitude index means (where index values less than 1.00 indicate more negative attitudes toward drugs than those displayed by the appropriate control group) reveals that the motivational introduction versions of the PSAs were more effective than the non-intro versions [$\bar{X}$(intro) = .88; $\bar{X}$(non-intro)=1.01]. This is consistent with the findings for behavioral intention. In addition, subjects in the HSV condition had more negative attitudes relative to their control group (X = .87) than did subjects in the LSV condition ($\bar{X}$ = 1.03).

The interaction between sensation seeking and drug use was significant (p = .0001), as it was in the behavioral intention analysis, and the pattern of means is very consistent with the pattern for behavioral intention (see Figure 4). HSS users had the lowest (most negative) attitude

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FIGURE 4 ABOUT HERE

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index mean ($\bar{X}$ = .85), indicating that they were more influenced in the desired direction than the other three groups. This same group also

displayed the strongest positive effects on behavioral intention to call the appropriate hotline. By comparison, the group with the highest attitude index mean was the LSS users ($\bar{X}$ = 1.35), indicating this group was more positive about using drugs than the appropriate control group (difference between HSS user and LSS user means significant at p = .001 by two-tail test). This group also had the lowest behavioral intention index mean ($\bar{X}$ = .85), indicating a lower behavioral intention to call the hotline than the control group. The LSS users, then, seemed to display a boomerang effect, although as noted earlier, the cell size is very small (n=11). Assuming the finding is not due to sampling error, a consistency explanation might be in order. The fact that members of this group are users of illicit drugs is inconsistent with their sensation seeking makeup. They may be involved in drug use as a result of heavy peer pressure, and may feel very uncomfortable with their user status. This could result in a classic defensive response to anti-drug messages.

The means on the right hand side of Figure 4 seem to indicate that the test messages were ineffective with non-users of drugs. Again, though, this inference ignores the effects of different message conditions. The four-way interaction involving all of the independent variables approached significance (p = .087), and once again it is instructive (as it was in the behavioral intention analysis) to examine the relative effects of the four sensation seeking X drug use groups (see Table 4). Again, we must keep in mind that certain cell sizes are small and that not all mean comparisons are statistically significant by Duncan's test.

TABLE 4 ABOUT HERE

We expected to observe pronounced targeting effects in the analysis of behavioral intention, since that index is closely tied to the nature of the persuasive appeal presented in the PSA (i.e., call about alternatives to drug use vs. call about how to resist peer pressure). The attitude index, by comparison, was not related in such direct fashion to the persuasive appeal. All four message versions depicted negative consequences of drug use, and thus all four might have been expected to induce more negative attitudes about drugs. The HSV version, though, had a somewhat longer "drug alley" scene with more young adults shown using drugs in a "down and out" environment, and thus might have been anticipated to have greater attitudinal impact.

As shown in Table 4, the motivational intro version of the HSV message was, in fact, the most persuasive (i.e., induced the lowest attitude index means) of the four messages with each of the four groups: LSS users and non-users, HSS users and non-users. This finding also is consistent with the additive main effects of the message sensation value and motivational introduction factors. Some evidence of targeting, however, remains. The HSS users not only were more affected by the HSV intro message than by the other messages, but the subgroup of HSS users exposed to this message displayed the lowest attitude index mean across all groups and conditions ($\bar{X}$ = .67). HSS users were <u>least</u> affected, on the other hand, by the LSV non-intro PSA ($\bar{X}$ = .96). Also, among HSS non-users, the HSV intro PSA was the only message version which produced attitudes in the experimental group which were more negative than those of the relevant control group ($\bar{X}$ = .75). Once again, a message aimed specifically at high sensation seekers appears to have been more effective with that group.

DISCUSSION

The results of this study provide rather convincing evidence that two related factors, sensation seeking and message sensation value, can be employed in concert to target televised anti-drug PSAs at young adults who are users of illicit drugs or at risk of becoming users. They also indicate the importance of developing effective verbal message introductions which motivate and/or facilitate further message processing. The specific nature of the most effective messages within different audience subgroups depends, however, upon whether one's goal is to bring about specific modest behavioral changes, or instead focuses on changing drug-related attitudes in order to create a negative "climate of opinion" for drug use.

If the goal of the media campaign is modest behavioral change, such as inducing young adults to call a hotline for drug-related information or to put them in touch with face-to-face intervention programs, then this study offers clear guidelines for designing messages to reach non-drug users with different needs for sensation. For high sensation seeking non-users, a group whose members are particularly at risk to become users, a message which stresses exciting alternatives to drug use and is high in sensation value clearly is more likely to be effective than one which stresses peer resistance skills and is lower in sensation value. Driven by a biologically-based need for sensation, these individuals are attracted to information about activities which fulfill this need. They may indeed already be involved in many such activities. Low sensation seeking non-users, on the other hand, appear to be much more influenced by a message which stresses peer resistance skills and is low in sensation value than by a message which features exciting alternatives to drug use and is high in sensation value. A question worth investigating is whether members of this

group actually are frequently subjected to peer group pressure to use drugs, or whether they simply fear such pressure. In any case, their lower need for sensation makes information about exciting alternatives to drug use much less salient than it is to high sensation seekers.

The finding that high sensation seeking users are vulnerable to appeals based on exciting alternatives and to those featuring peer resistance information is somewhat surprising, and indicates the need for further research (soon to be carried out by the first author) into the development of peer group networks among high and low sensation seekers. It may be that high sensation seekers at some point in their psychosocial development begin to choose others as friends who share their propensity for thrilling and exciting activities, including drug use. If indeed the relevant peer groups of HSS drug users contain disproportionate numbers of other HSS users, then information about peer resistance skills would be sorely needed by those who desire to stop or decrease their use of drugs. In any event, it is encouraging to note that high sensation seeking users, who might be expected to be the most impervious to media influence, nonetheless were vulnerable on the behavioral intention index to both kinds of message appeals employed here, and to the high sensation value messages on the attitude index. While many of those classified as "users" in this study were only low to moderate in their use of illicit drugs, our findings caution against assuming that HSS users are "unreachable" in a media PSA campaign. The messages, however, must be carefully designed and targeted.

If a primary goal of a media campaign is to change attitudes in order to create an unfavorable climate of opinion about drugs, then our results indicate somewhat less need for sensation-related targeting of messages. The finding that the HSV message with motivational introduction was the

most effective message across all four user X sensation seeking groups indicates that a relatively "strong" message which stresses negative consequences of drug use can be effective in changing drug attitudes.

As discussed earlier, however, there also were indications in the data that high sensation seekers may be more affected attitudinally by an HSV message with intro than are LSS. This is not surprising, given our formative research which showed that HSS preferred TV ads/PSAs with greater emotional impact. In fact, the focus group findings implied that it might be difficult to make a message "too strong" for high sensation seekers--that highly sensational fear appeals may work for those with particularly strong sensation needs (something not considered in research on fear appeals).

It is certainly possible, on the other hand, to make a message "too strong" for low sensation seekers. At just what point one exceeds the limits of tolerance for low sensation seekers is extremely difficult to determine, but apparently the HSV intro message employed here did not exceed those limits, given its apparent effectiveness with low sensation seekers on the attitude measure. This is consistent with the observation that any serious drug-related health consequences were only <u>implied</u> by the PSA ambulance scene and by the written message (in the HSV version): "Drugs can take you out of the game." More direct, dramatic depictions of serious consequences might be too much for low sensation seekers to accommodate, but may prove effective with high sensation seekers. If so, then messages which represent the upper ranges of the message sensation value dimension might be expected to show much stronger differential or "targeting" effects on the attitudes of high and low sensation seekers than those in the present study. Since televised anti-drug PSAs are turning to more explicit

depictions of drug use consequences, this is a question worth investigating.

NOTES

1. Variables employed to determine the appropriate control group were sensation seeking (high or low) and drug use (user vs. non-user). Thus high sensation seeking users in the experimental group were compared to high sensation seeking users in the control group, and so on.
2. Because time constraints did not allow subjects to be run individually, they were run in groups of two to five persons (usually four or five persons). These groups (rather than individuals) were randomly assigned to the experimental conditions or control group.

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TABLE 1

SENSATION SEEKING AND DRUG USE AMONG
JUNIOR AND SENIOR HIGH SCHOOL STUDENTS*

	Junior High LSS n=658	Junior High HSS n=565	Senior High LSS n=450	Senior High HSS n=420
Marijuana	6.2	24.7	13.0	38.3
Cocaine	.6	3.4	1.8	6.6
Liquor	20.7	58.3	28.5	67.1
Beer	24.9	58.3	38.0	70.5
Uppers	1.4	14.9	2.0	14.8
Downers	.5	11.2	1.6	6.6

*These figures represent percentage of students at the seventh through twelfth grade levels who indicated using particular drugs at least once during the last 30 days.

TABLE 2

BEHAVIORAL INTENTION[1]

Interaction Between Drug Use,
Message Sensation Value, and
Motivational Introduction

Drug Use in Past 30 Days

Message Sensation Value		NON-USERS LSV	NON-USERS HSV	USERS LSV	USERS HSV
Motivational Introduction	Non-Intro	1.08_{ab}	$.82_{b}$	.88	1.32
	Intro	1.30_{a}	1.25_{a}	1.72	1.23

1. Behavioral intention (BI) index indicates mean BI of experimental group to call the appropriate hotline relative to mean BI of appropriate control group.

2. F for one-way ANOVA of the Non-User means = 2.42, p = .07. Means without a common subscript differ at the .05 level by Duncan's test.

3. F for one-way ANOVA of the User means = 1.21, p = .32.

TABLE 3

BEHAVIORAL INTENTION[1]

Message Sensation Value by Motivational Introduction for High and Low Sensation Seeking Drug Users and Non-Users

Motivational Introduction		LSS NON-USERS (n=76)[2] Non-Intro	LSS NON-USERS (n=76)[2] Intro	HSS NON-USERS (n=42)[3] Non-Intro	HSS NON-USERS (n=42)[3] Intro
Message Sensation Value	LSV	1.27_a	1.48_b	$.70_b$	1.04_b
	HSV	$.81_a$	1.11_a	$.84_b$	1.58_a

Motivational Introduction		LSS USERS (n=11)[4] Non-Intro	LSS USERS (n=11)[4] Intro	HSS USERS (n=36)[5] Non-Intro	HSS USERS (n=36)[5] Intro
Message Sensation Value	LSV	.45	.96	.96	2.04
	HSV	1.08	.78	1.37	1.43

1. Behavioral intention (BI) index indicates mean BI of experimental group to call the appropriate hotline relative to mean BI of appropriate control group.

2. F for one-way ANOVA of the LSS Non-User means = 2.08, p = .11. Means without a common subscript differ at the .05 level by Duncan's test.

3. F for one-way ANOVA of the HSS Non-User means = 5.37, p = .004. Means without a common subscript differ at the .05 level by Duncan's test.

4. F for one-way ANOVA of the LSS User means = .80, p = .53.

5. F for one-way ANOVA of the HSS User means = 1.26, p = .30.

TABLE 4

ATTITUDE TOWARD DRUGS[1]

Message Sensation Value by Motivational Introduction for High and Low Sensation Seeking Drug Users and Non-Users

		LSS NON-USERS (n=76)[2]		HSS NON-USERS (n=42)[3]	
Motivational Introduction		Non-Intro	Intro	Non-Intro	Intro
Message Sensation Value	LSV	1.11_{b}	$.85_{a}$	1.04	1.11
	HSV	$.88_{a}$	$.79_{a}$	1.04	.75

		LSS USERS (n=11)[4]		HSS USERS (n=36)[5]	
Motivational Introduction		Non-Intro	Intro	Non-Intro	Intro
Message Sensation Value	LSV	1.40	1.49	$.96_{a}$	$.89_{ab}$
	HSV	1.42	1.11	$.84_{ab}$	$.67_{b}$

1. Attitude index is ratio of mean attitude of experimental group to mean attitude of appropriate control group.

2. F for one-way ANOVA of the LSS Non-user means = 5.40, p = .002. Means without a common subscript differ at the .05 level by Duncan's test.

3. F for one-way ANOVA of the HSS Non-user means = 1.72, p = .18.

4. F for one-way ANOVA of the LSS User means = .65, p = .61.

5. F for one-way ANOVA of the HSS User means = 1.98, p = .14. Means without a common subscript differ at the .05 level by Duncan's test.

FIGURE 1

An activation model of information exposure

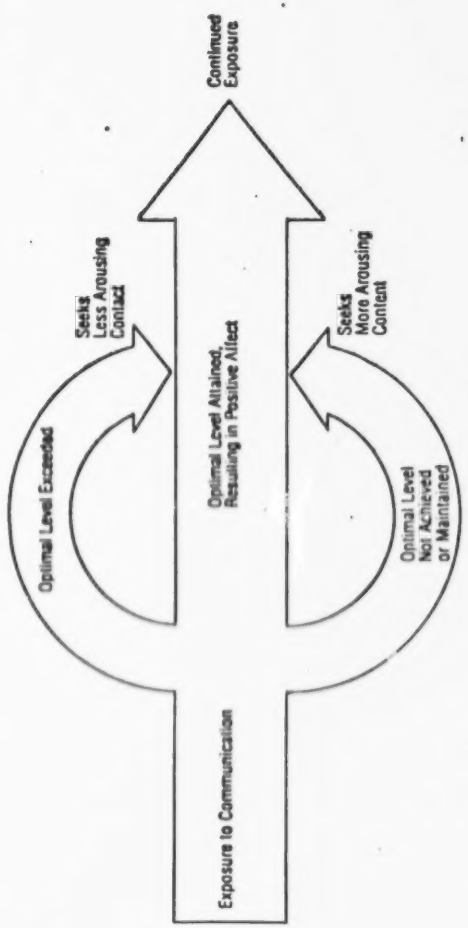
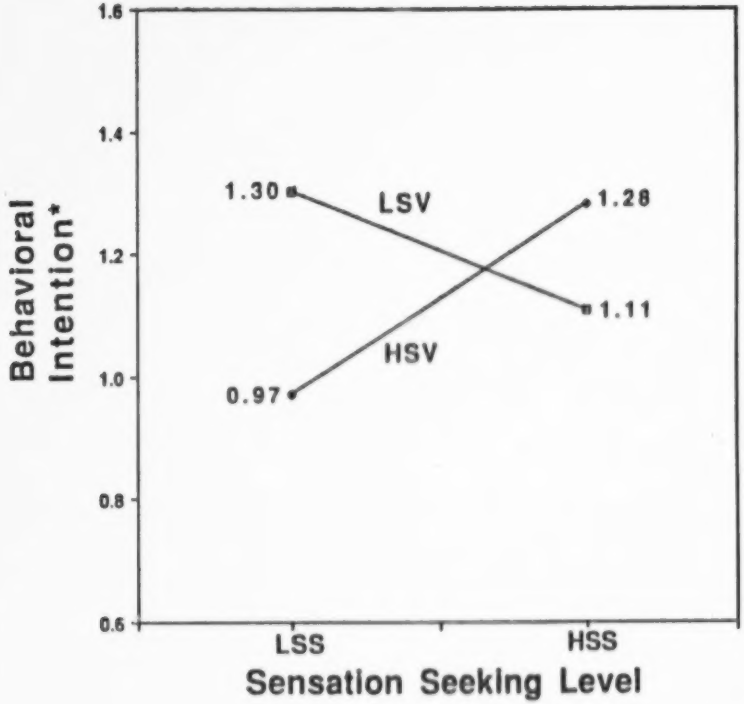

Continued Exposure
Seeks Less Arousing Content
Seeks More Arousing Content
Optimal Level Exceeded
Optimal Level Attained, Resulting in Positive Affect
Optimal Level Not Achieved or Maintained
Exposure to Communication

FIGURE 2

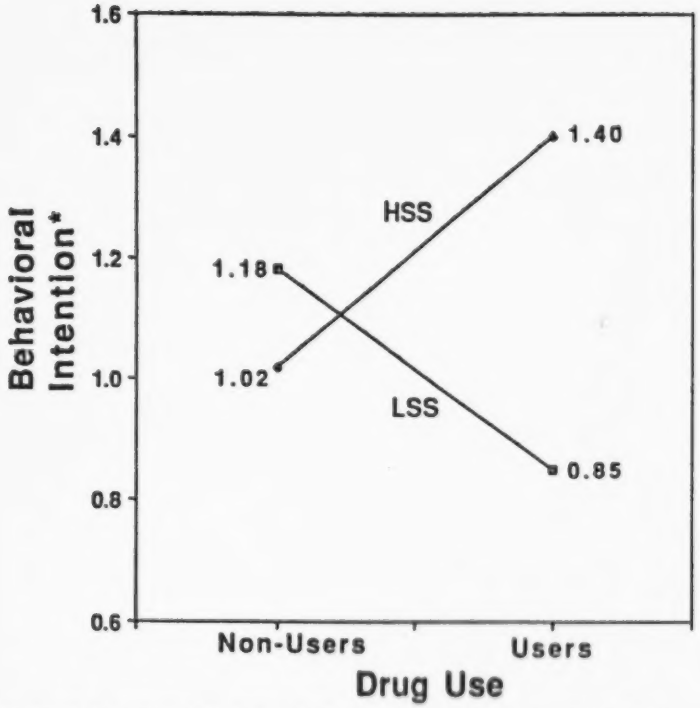
Behavioral Intention:
Sensation Seeking by Message Sensation Value



**Behavioral Intention (BI) index indicates mean BI of experimental group to call the appropriate hotline relative to the mean BI of the appropriate control group.*

FIGURE 3

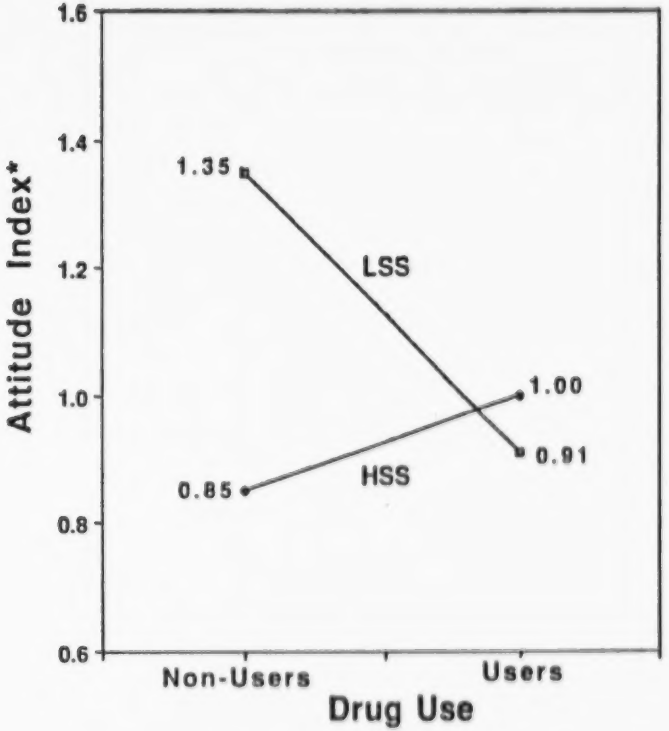
Behavioral Intention:
Sensation Seeking by Drug Use



*Behavioral Intention (BI) Index indicates mean BI of experimental group to call the appropriate hotline relative to the mean BI of the appropriate control group.

FIGURE 4

Attitude Toward Drug Use:
Sensation Seeking by Drug Use



*Attitude index indicates mean attitude of experimental group relative to the mean attitude of appropriate control group.